

International Association of Survey Statisticians
(IASS)

THE SURVEY STATISTICIAN

Association Internationale des Statisticiens D'Enquêtes
(AISE)

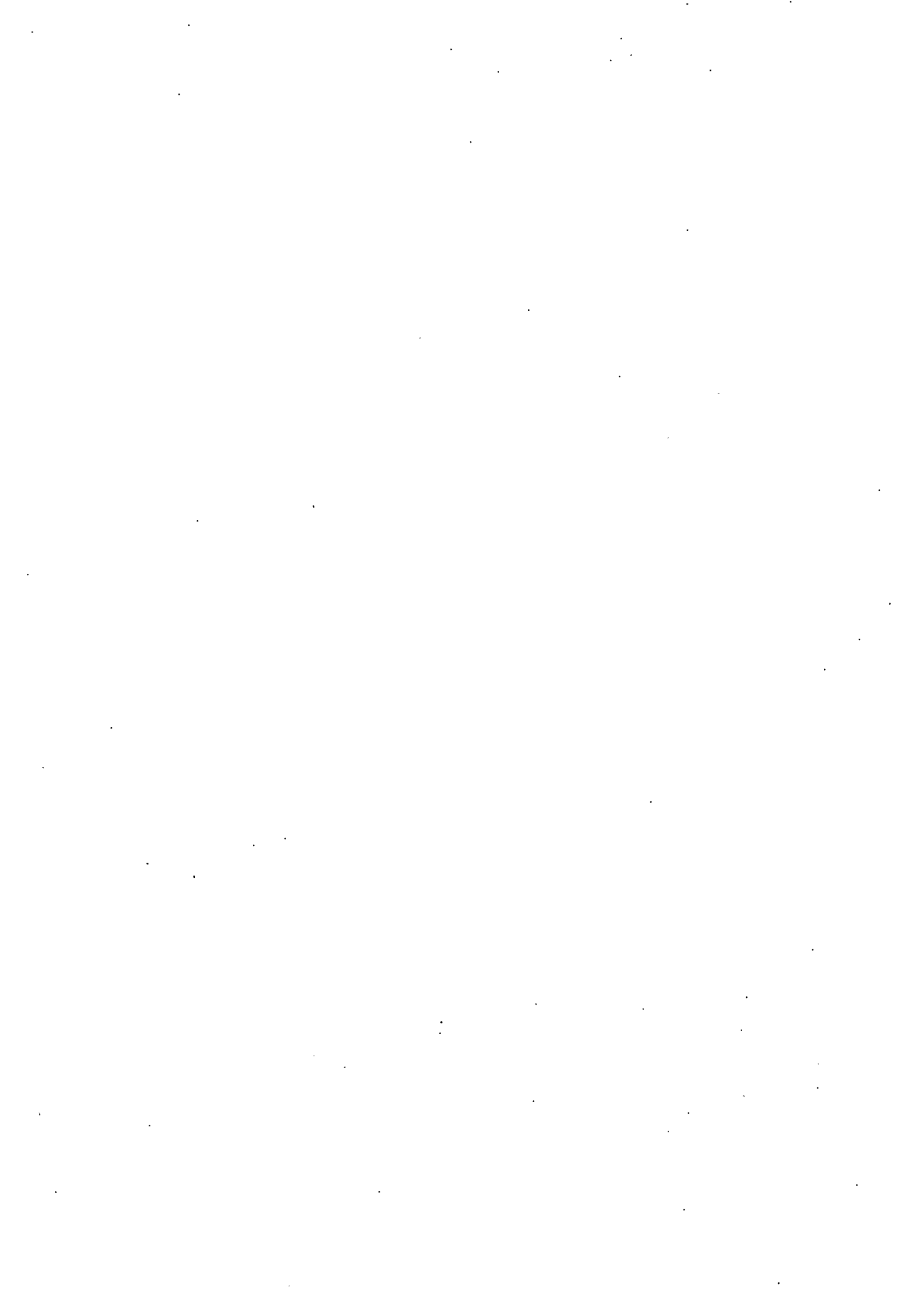
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CONTENT

Introduction	1
IASS News	1
Forthcoming ISI Sessions	2
Short Courses On Survey And Census Methodology	3
The Application Of Total Quality Management (TQM) Within A Survey Statistics Department	5
Progress In Introducing Federal Statistics In The New Länder	8
Country Reports	10
Questions And Answers	21



INTRODUCTION

The Survey Statistician is the newsletter of the International Association of Survey Statisticians (IASS).

For information on how to join the IASS contact:

IASS Secretariat
c/o INSEE
18 boulevard Adolphe-Pinard
75675 Paris, Cedex 14
France

Articles, notices and other items of interest for possible inclusion in the Survey Statistician will be warmly welcomed. Of nine articles promised for this issue only one has been received - hence the delay in the newsletter production. We hope to improve on the submission rate. Please contact the editor to discuss possible contributions:

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The content and format of this newsletter are under review and Denise Lievesley would welcome your suggestions for improvement.

IASS NEWS

Bernard Grais, the IASS Executive Director, has left Paris in order to join Eurostat. As a consequence of his move Bernard Grais is unable to continue as the Executive Director and Alain Charraud has taken over from him. Monsieur Charraud will be the Deputy Executive Director until he is appointed as Executive Director by the IASS Council when they meet in Florence.

We are very grateful to Bernard Grais for his dedication to the IASS and wish him well in his new appointment. Meanwhile we welcome Alain Charraud and hope he will enjoy his association with the IASS. Anne Marie Vespa-Leyder continues to provide excellent service to the IASS and will be assisting Alain Charraud.

The current IASS Council comprises:

President:	Graham Kalton (UK)
President-Elect:	Lars E Lyberg (Sweden)
Executive Director:	Bernard Grais (France)
Deputy Executive Director:	Alain Charraud (France)
Vice-Presidents:	Ben Kiregyera (Uganda) Isidoro P David (Phillippines)
Scientific Secretary:	Kirk M Wolter (USA)
Director of the ISI Permanent Office:	Zoltan E Kenessey (ISI)

Results of the 1993 Election of IASS Officers and Council Members

We are pleased to announce the election of the following people and offer them our warmest congratulations:

President-elect:	D Trewin (Australia)
Vice-Presidents:	T M F Smith (UK) K Wolter (USA)
Scientific Secretary:	C Skinner (UK)
Council Members: (4 years)	G Forsman (Sweden) V K Verma (India) J C Deville (France) R Groves (USA) M Sanjurjo (Argentina) A Marton (Hungary)

FORTHCOMING ISI SESSIONS

The 49th session of the ISI will be held in Florence from August 25th to September 2nd. Anyone who has not yet registered should do so as a matter of urgency:

contact:	International Statistical Institute	or	Newtours
	428 Prinses Beatrixlaan		Via G Monaco 20/A
	PO Box 950		50144 Firenze
	2270 AZ Voorburg		Fax: 39 55 36 6969
	Netherlands		

Tel: 31 70 3375737
Fax: 31 70 3860025
E-mail: isi@cs.vu.nl

At the Florence meeting the IASS/IAOS will be holding a panel discussion on "The Impact of Political Structures on the Demand for a Production of Statistics".

The panel will be comprised of senior statisticians from an international agency, a developed country, a developing country and an eastern European country in transition.

This notice is an invitation for members to send a suggested question or topic for discussion. We intend to organize these into related themes so that the panel discussion and contributions from other participants can be well structured.

Whether or not members are able to attend the ISI meetings they are invited to suggest a question or topic so that the main issues are discussed.

Please send any suggestions to Professor D Holt, Department of Social Statistics, Southampton, SO0 5NH, United Kingdom. Fax: 44 703 593846.

During the session in Florence discussions will be held regarding the structure and topics of the scientific programme for the 50th ISI session (which is scheduled to be held in Beijing in 1995). Len Cook is the IASS programme chair for the Beijing session and he would be pleased to receive your ideas. Len Cook, Government Statistician, New Zealand Department of Statistics, PO Box 2922, Wellington, New Zealand. Internet lcook@stats.govt.nz

A VALUABLE PROGRAM OF SHORT COURSES ON SURVEY AND CENSUS METHODOLOGY - August 21-25, 1993

The International Association of Survey Statisticians is sponsoring a valuable program of short courses during the week prior to the 49th Session of International Statistical Institute. The courses will afford the opportunity for practitioners, researchers and students in statistics, survey methodology and related fields to sharpen skills and discuss issues of common interest.

All courses will be held at the Universita' Degli Studi Di Padova (Padua). Padua, a town of ancient origins, lies at the center of the Venetian plain, Northern Italy, between a lagoon, hills and the foothills of the Alps. International participants should plan to fly into a nearby airport, such as Milano (Milan), or Roma (Rome). There are excellent connections by rail, bus or rental car from airports to Padua. Plan your arrival in Padua for the evening before the start of your course(s). The program will end early enough on Wednesday August 25, to enable transit by rail to Firenze (Florence) for the opening ceremonies of the ISI session.

Registration fees for short courses are as follows:

	Developing Countries	Developed Countries	Students
One course	\$300	\$350	\$150
Two courses	\$350	\$450	\$200
Three courses	\$400	\$500	\$225

All prices quoted in US dollars

Short Courses

Workshop on Survey Sampling in Developing Countries

August 22-24, 1993. Presented in English by: Graham Kalton, Westat, Inc., Rockville, MD, USA; Colm O'Muircheartaigh, London School of Economics, London, UK; Nanjamma Chinnappa, Statistics Canada, Ottawa, Ontario, Canada; Anis Maitra, United Nations Statistical Office, New York, NY, USA.

Variance Estimation in Complex Surveys

August 24-25, 1993. Presented in English with assistance in French by: Wayne A Fuller, Iowa State University, Ames, IA, USA; Michael Hidiroglou, Statistics Canada, Ottawa, Ontario, Canada; Kirk M Wolter, A C Nielsen Company, Northbrook, IL, USA.

Environmental Sampling, Statistical Modeling and Observational Economy

August 21-22, 1993. Presented in English by: S D Gore, G P Patil, A K Sinha, C Taillie and S K Thompson, Center for Statistical Ecology and Environmental Statistics, Department of Statistics, Pennsylvania State University, University Park, PA, USA; G Lovison, Department of Statistics, University of Padua, Padua, Italy.

Survey Measurement: Methods for Error Evaluation and Reduction

August 24-25, 1993. Presented in English by: Paul P Biemer and Barbara H Forsyth, Research Triangle Institute, Research Triangle Park, NC, USA; Judith T Lessler, Battelle, Research Triangle Park, NC, USA.

Last minute registrations are possible. Please contact Professor Luigi Fabbri, Department of Statistics, University of Padua, Padua, Italy, **urgently** (tel: 39 49 832140)

THE APPLICATION OF TOTAL QUALITY MANAGEMENT (TQM) WITHIN A SURVEY STATISTICS DEPARTMENT

David Morganstein, Westat, Inc.

The approach of continuous quality improvement can be applied to attaining the goals of a survey statistics department (Morganstein and Hansen, 1990). Groves and Tortora (1991) apply the concept of total quality management to the problem of survey quality. Colledge and March (1993) discuss the use of Quality Management as a method for improving the work of the Business Survey Methods Division of Statistics Canada. This note describes experiences within the statistics department of a private large-scale survey research organization with a strategy for attaining the objective of continual quality improvement of the work performed by the department.

Our strategy contains three primary elements: employee development; documentation and use of standard procedures; and improved technology. Employee development includes both formal and informal opportunities for staff to gain breadth and depth of statistical knowledge. The development and use of standard procedures leads to productivity improvements which result in reduced cost of operation. Continuous enhancement of technology is probably the most widely accepted method for scientific organizations to improve their quality. These elements are not unique to our organization. They have been applied, for example, by the Australian Bureau of Statistics to improve the quality assurance of their ABS Business Surveys (Linacre, 1991).

Technical training for statistical staff must continue beyond that received in the attainment of advanced degrees. This continued training may come by formal or informal means. Management can sponsor and support informal training sessions, for example, regular lunch-time discussions of technical issues under exploration within the department. Financial support can encourage staff in their efforts to upgrade and update their formal academic training with specialized, focused learning. Such support is all the more important since few university statistics departments offer specialized programs for survey statisticians. In addition, staff can be encouraged to contribute at professional meetings, as presenter, discussant or organizer and to prepare technical papers for submission to peer-reviewed journals.

The development and routine use of standard procedures for tasks performed repeatedly will enhance any statistical organization's ability to perform its functions effectively. The use of such procedures is all the more important in a private survey research organization that is required to complete a large number of varied projects, in short time periods, each with their own unique characteristics. In order to increase the likelihood of successfully developing and continually improving standard procedures, senior management must recognise that the resources required to accomplish this goal will reap significant rewards.

By way of example, we describe five teams within our organization that are documenting routine procedures within the statistics department. Currently, teams are addressing the following topics: single stage list-sampling; random digit dialling sample designs for telephone surveys; imputation; weighting procedures; and, documentation.

In addition, statisticians serve on inter-departmental teams to document those functions requiring technical input (e.g. sampling of phone numbers for use in RDD surveys).

The team contain staff members with varying levels of experience, each bringing different strengths to the effort. The teams prepare either a checklist or a flow chart accompanied by detailed text on the ways in which specific statistical functions are to be completed. The detailed text provides a comprehensive explanation for the various steps of the process, and may include rough and ready approximations to help the less experienced practitioner identify unexpected outcomes. In this way, the text serves as a learning aid. Finally, these documents are reviewed and discussed among all staff members to arrive at agreement on the approaches to be followed.

The documents on Current Best Methods (CBMs) are intended to undergo regular review and evolution as improved methods are developed and details modified. Teams continue to meet periodically to reflect on recent research and to reconsider the current preferred methods. The use of the term CBM instead of Standard Operating Procedures (SOPs) was deliberate, intending to convey the idea of a continued evolution in process. The preparation of an initial written procedure or checklist is not meant to signify a conclusion of the team's activities; rather, the written descriptions are a starting point for continuous improvement.

A widely accepted aspect of improved quality is the use of better technology. Improved technology includes both the development and the implementation of more efficient methods. Drawing upon the knowledge of experienced staff, new techniques need to be developed and reported on in professional journals and at professional meetings. The use of increasingly powerful computing equipment can supplement improved efficiency.

In our case, automated, standardized software has been prepared using more efficient methods for sampling, imputation, the preparation of survey weights and the computation of sampling errors. We have chosen to place resources on the continuous improvement of standardized modules as opposed to the ad hoc development of routines unique to each problem. While making incremental improvements to these modules, we can expect to reduce developmental errors and the time required for survey processing.

The benefits of quality improvements may be felt beyond the developing organization. Improved methods reported on in journal articles and discussed at conferences raise the standards for all organizations with active professional development programs. Only a decade ago, the reporting of sampling errors was the exception rather than the rule. Our software for variance estimation is routinely given to clients to facilitate the computation of sampling errors to that the quality of our clients' work may be enhanced through the inclusion of measures of precision along with survey estimates (Flyer, Rust and Morganstein, 1989). Our software for imputation automatically produces diagnostic data on the way in which the imputations have been performed,

thereby allowing a more thorough review of the imputation process. Other organizations similarly make technological improvements available to the research community. What was innovative a decade ago becomes commonplace as higher levels of quality enhance all organizations adopting these more effective methods.

In summary, quality can be improved in many ways. The knowledge and capabilities of professional staff can be raised through both informal and formal technical training. Technological improvements can improve efficiency and reduce the number of errors. Less well known, the use of standardized procedures can decrease both development time and rework activities.

References

Colledge, Michael and March, Mary (1993), "Quality Management: Development of a Framework for a Statistical Agency", *Journal of Business & Economic Statistics*, Vol 11, No 2, April 1993, 157-165.

Flyer, P, Rust K, and Morganstein D (1989), "Complex Survey Variance Estimation and Contingency Table Analysis Using Replication" *Proceedings of the Section on Survey Research Methods, American Statistical Association*, 110-119.

Groves, Robert M, and Tortora, Robert D (1991), "Developing a System of Indicators for Unmeasured Survey Quality Components" *Bulletin of the International Statistical Institute*, Vol 54, Book 2, Topic 18, Paper 1. Also, *International Association of Survey Statisticians Booklet*, Vol II, Invited Papers, Cairo, 280-296.

Linacre, Susan (1991), "Approaches to Quality Assurance in ABS Business Surveys" *Bulletin of the International Statistical Institute*, Vol 54, Book 2, Topic 18, Paper 2. Also, *International Association of Survey Statisticians Booklet*, Vol II, Invited Papers, Cairo, 297-321.

Morganstein, D R and M Hansen (1990) "Survey Operations Processes: The Key to Quality Improvement" *Data Quality Control*, G E Liepins, and V R R Uppuluri (eds), New York, Marcel Dekker, Inc.

PROGRESS IN INTRODUCING FEDERAL STATISTICS IN THE NEW LÄNDER

by Evelyn Grünheid, Wiesbaden - Berlin

About two and a half years have now passed since the day of German unification. The Federal Statistical Office and the newly founded statistical offices of the Länder have made great efforts to put the programme of federal statistics into practice in the new Länder. In spite of some delays and a sometimes not yet sufficiently good quality of the results, federal statistics have become part and parcel of everyday life in the new Länder as well.

However, problems still exist with regard to statistics that were not at all, or not in a comparable form, produced in the former GDR. Examples are statistics on the environment and individual price statistics. Furthermore, introducing secondary statistics which depend on the process of setting up the respective administrations, and partly also on preparing legal regulations at the Länder level, was much more difficult and took much more time than had been assumed in the beginning.

This has an impact particularly on national accounts, where the results for the new Länder and Berlin-East are generally not as reliable as comparable data for the former territory of the Federal Republic. Though in January 1993, topical results were issued for the whole of Germany for 1992, the variables covered and the detail of breakdown were not yet comparable with those of the former territory of the Federal Republic.

At the beginning of 1993, the prevailing situation and the problems regarding the main fields of federal statistics were the following:

Population, employment, housing

In April 1991, a microcensus survey was for the first time conducted in the new Länder and Berlin-East. The two microcensus supplementary surveys of October 1991 and January 1992 reflected short-term changes in the labour market.

Considerable problems still exist in developing short-term, i.e. particularly monthly indicators of employment. These problems are mainly due to the lack of statistics on persons employed subject to social insurance contributions. The Federal Institute for Employment however expects that these results based on administrative records can soon be issued on a quarterly basis.

As far as housing is concerned, a 1%-sample of buildings and dwellings is scheduled for 1993 and a census of buildings and dwellings in the new Länder and Berlin-East for 1995.

Production industries

As regards short-term statistics on production industries and the relevant indices, efforts have been made to reduce the delays in providing data. By and large, the surveys are conducted as planned. In general, calendar and seasonal adjustments and also the price adjustment of indices cannot yet be made. The detail of the breakdown of results is partly still limited.

Annual surveys of fixed capital formation and the cost structure in production industries were conducted for the first time in the middle of 1992. However, the results are not yet available. In 1994, a census of handicrafts will take place in the new Länder and Berlin-East. On its basis, new handicrafts reports will be prepared.

Agriculture, trade and transport

Already in 1991, the survey and tabulating programme for agricultural statistics could almost completely be introduced in the new Länder. The general livestock census of December 1990 and the 1991 census of agriculture produced up-to-date sampling frames for following representative surveys.

Since May 1991, accommodation statistics have been compiled in the new Länder. A census of distribution will still be carried out in 1993.

Basically, the process of introducing federal statistics has also been completed with regard to transport. Statistics on the traffic performance in road passenger transport, the survey of enterprises on road passenger transport, statistics on road traffic accidents and others are compiled in line with a uniform concept for the entire Federal Republic.

Prices and corporate balance sheets

Current results can be issued for the new Länder with regard to the statistics on consumer prices, on producers' prices of agricultural and industrial products and on building prices. In general, these results become available almost at the same time as the data for the former territory of the Federal Republic. However, indices cannot yet be computed for the statistics on foreign trade prices and wholesale prices because so far it has not yet been possible to develop weighting patterns and the groups of reporting units still are subject to a high degree of fluctuation. Since the adjustment of the economy and consumption habits in the new Länder has by no means been completed, new index computations might rather often be required for the new Länder in the next few years.

Presumably in the middle of 1993, year-end accounts of incorporated enterprises and public utility, waste disposal and transport enterprises will for the first time be available for 1991, i.e. the first complete financial year of the new Länder.

In the middle of 1992, the 1991 and 1992 surveys of the cost structure were started in the sectors of handicrafts, services, retail and wholesale trade, the agents and brokers business, hotel and restaurant industry, tourism and also for doctors and dentists.

Finance and taxes, education and public health

For the first time in 1991, the Länder and communities/communal associations of the new Länder made an independent budgetary accounting. This provided the basis for collecting data for financial statistics. The results of the quarterly cash and debt statistics and the annual debt statistics are now available for 1991. Statistics on financial planning were still suspended pursuant to the regulation on the adjustment of statistics.

Statistical surveys in the sectors of education and public health generally are also in line with the programmes applied in the former territory of the Federal Republic. Due to the radical structural changes which have taken place in the educational system of the new Länder since 1990, however, the quality and reliability of data is still reduced in some spheres (e.g. university statistics).

To sum up, it can be said that the major components of the programme of federal statistics have been put into practice in all fields of statistical work and in all of the new Länder and Berlin-East. The problems which still exist refer to updating and completing the registers of respondents, providing results on schedule and improving the quality of the data material which in some isolated cases is not yet sufficient good.

COUNTRY REPORTS

Gordon Brackstone, of Statistics Canada, has gathered together and edited a large number of reports on surveys and related activities in a range of countries:

	page no.
Argentina	10
Canada	11
Central America	12
Germany	12
Hungary	13
New Zealand	14
Poland	15
Spain	16
Sweden	17
Turkey	17
U.K.	18
U.S.A	19

ARGENTINA (from Mrs. Clyde Charre de Trabuchi)

The Instituto Nacional de Estadística y Censos (INDEC) has conducted a Post Enumeration Survey (P.E.S.) in conjunction with the 1991 Census. The survey began one day after the Census day, May 15th, and lasted one month. The goal of this survey was to provide a measure of Census omissions. This evaluation will be used to inform users about a limitation of the Census and to help planning of future Censuses.

The estimator used is called the "Peterson Estimator" or the "Dual System Estimator" and is based on capture-recapture models. The assumption that the population is closed was addressed in the questionnaire which enquired about the migration status of the household and its members after Census day. The interviewer obtained this information directly from non-migrants and new immigrants or recovered this

information from other members of the household in cases of emigration.

The independence assumptions have been satisfied because the P.E.S. teams did not participate in the Census duties and all the units in the sample segments were listed by one member of those P.E.S. teams.

The stratified segment sample was selected with probability proportional to the total housing of the cities. Each segment consisted of about 20 houses, the total sample was 14,800 houses and the sampling fraction was approximately 4/1000.

The failure to accurately match persons from the sample survey to the Census was taken into account by developing careful instructions. One subsample was rematched and studied using a matching error model; the index of inconsistency obtained, 6.6%, is reassuring.

The procedure of relative variance was considered adequate to provide a sampling error estimate that takes into account part of the total error due to measurement error.

The report presents estimates of the total of undercounted people and of the omission rate for non-institutional population classified by big cities and capitals of states, and by several demographic variables such as sex and age.

To obtain more detailed information please contact Norma Pizarro de Pereira, Direccion de Estudios Estadisticos - INDEC, Diagonal Roca 609 - (1067) Buenos Aires - Argentina.

CANADA (from G.J. Brackstone)

Statistics Canada's Time Series Research and Analysis Centre is about to release a micro-computer programme which will perform interpolation, benchmarking (étalonnage) and calendarization (calendrialisation). Interpolation consists of estimating more frequent values from less frequent data (for example, monthly or quarterly values from annual data, daily values from weekly data, annual values from quinquennial data). Benchmarking consists of combining data of different frequencies to obtain more reliable estimates (for example adjusting monthly data to be consistent with annual totals). Calendarization transforms fiscal period data into calendar values (for example, fiscal year data into calendar year values). The statistical methodology used in the programme covers the most widespread methods used at Statistics Canada and in other statistical agencies. For more information, contact Pierre Cholette (613-951-1601), Time Series Research and Analysis Centre, Statistics Canada, Ottawa, Ontario, K1A 0T6.

The Generalized Estimation System (GES) at Statistics Canada is being developed to produce point estimates and corresponding estimates of variance for parameters of the sampled finite population or of any domain of this population based on the sampling design and any available auxiliary population. At the current stage of development of the GES, the sampling designs include single-stage designs such as: stratified simple random sampling with and without replacement (SRSWR and SRSWOR), stratified cluster sampling and stratified probability proportional-to-size (PPS) sampling, as well as stratified multistage designs. The parameters of interest

include totals, ratios of totals, averages and proportions. The auxiliary information is used via regression type estimators developed by Fuller (1975), Särndal, Swensson and Wretman (1983), and Deville and Särndal (1992). For more information, contact Michel Hidioglou (613-951-4767), Business Survey Methods Division, Statistics Canada, Ottawa, Ontario, K1A 0T6.

Statistics Canada has released its estimates of the completeness of the 1991 Census. The overall rate of net undercoverage was 3.2%, and varied among the provinces from 1.2% to 4.1%. While data from the 1991 Census will not be adjusted for net undercoverage, the Agency will, for the first time, be incorporating estimates of net Census undercoverage into its post-censal estimates of population, beginning with the June 1, 1993 estimates. For more information, contact Don Royce (613-951-6940), Social Survey Methods Division, Statistics Canada, Ottawa, Ontario, K1A 0T6.

CENTRAL AMERICA (from David J. Fitch)

It appears that the Guatemalan Census scheduled for May of this year will be postponed, perhaps to August.

The second meeting of the Biometric Society Central America and Caribbean Network, organized last year in Trinidad, will be held June 27-July 1 at CATIE, Turrialba, Costa Rica. We hope to have a few statisticians with sampling interests in attendance. There will be a paper on the problems and possibilities of sampling within villages of the developing world. For more information, contact Dr. Pedro Ferreira, E-mail, pferreir@uervm2.

INCAP (Nutrition Institute of Central America and Panama) has been asked to undertake a national survey of the health problems of Guatemalan women and their children, with a special emphasis on the indigenous and the poor. In preparation, INCAP plans to undertake analyses of similar data collected in 1987 to help determine optimum "take" from clusters. The previous survey aimed for 40 from rural clusters of about 120 households, which seems too large. I would be pleased to hear from others who might have similar interests. My address is Apartado Postal 1188, Guatemala or E-mail DFITCH@UCRVM2.

FEDERAL REPUBLIC OF GERMANY (from H. Strecker)

A **Colloquium on Quality of Statistical Data** took place on November 12-13, 1992 at the Federal Statistical Office. It was organized by this office in cooperation with the section "Methodik Statistischer Erhebungen" (methods of statistical surveys) of the German Statistical Society, chairman Rolf Wiegert, Tübingen. Among the topics discussed were the data quality requirements of various users, survey errors and their impact, methods for controlling and for measuring data quality, and the quality of particular data sets such as the national accounts.

The papers read during the 1992 meeting will be published (in German) within the next months under the heading "Qualität statistischer Daten" (quality of statistical data) in the series "Forum der Bundesstatistik" edited by Statistisches Bundesamt. Those interested in this publication can buy it from Metzler - Poeschel - Verlag, P.O.B. 1152,

D (W) 7408 Kusterdingen (near Tübingen). For coming years colloquia on other topics are planned under the same joint organization of Official Statistics and the German Statistical Society.

Progress In Introducing Federal Statistics In The New Länder: An article on this topic can be found on pages 8-10 in this issue.

HUNGARY (from A. Marton)

The Hungarian Central Statistical Office (HCSO) launched a sub-annual sample survey of small enterprises in the manufacturing and construction industries in 1991. The target population of the sample survey for the 1991 reference year included only the enterprises with a particular legal status which were classified into the third and fourth size categories (with 21-50 and less than 21 employees, respectively). In 1992 the target population was supplemented by those enterprises without this legal status but which were obliged to maintain simple-entry bookkeeping. In 1993 the target population includes all enterprises (independent of legal status and bookkeeping) in the third category and, for the construction industry, the higher end of the fourth category (those with 11-20 employees).

The sampling frame is the HCSO business register. The most important variable being observed in the survey of manufacturing is total sales of own-manufacturing activity. While in 1991 the survey was quarterly, since 1992 it has been monthly. The size of the population in manufacturing and construction industries for 1993 is 2200 and 4300, respectively.

Prior to sampling, the target population was stratified using the following criteria: industry group, legal status, size category, location of headquarters, date of formation (so that in the sphere of "old" enterprises ratio estimates can be made).

In order to increase the efficiency of the sampling design, the likely standard deviation was estimated by stratum, then, relying on these figures, the sample size was determined with regard to required confidence limits. To make data collection easier, the selection of the sample was mostly confined to settlements covered by household surveys. (This hurts the probabilistic character of the sample and introduces a bias. On the other hand, it increases the response rate and, by this, reduces the other significant bias caused by nonresponse). These settlements comprise a random sample, proportional to size, consisting of 556 settlements (the capital and largest towns included). The size of the sample of small enterprises in manufacturing and construction industries for 1993 is 700 and 1300, respectively.

In the course of the survey, the totals, means, etc. of the various variables are estimated in the traditional way together with confidence intervals. The effect of nonsampling errors is explored through the continuous scrutiny of failures and special yearly follow-up studies.

For more information on this survey, please contact Laszlo Telegdi, Department for Survey Sampling (tel.: 361-115-9689), Central Statistical Office, P.O. Box 51, 1525 Budapest, Hungary.

NEW ZEALAND (from L. Cook)

The new organisation of the Department of Statistics is now in place. The three major groupings (Survey Management, National and Regional Statistics and Information Services) and the Corporate Office group have recently been working on business plans for the coming year. These business plans describe each unit's business purpose and assess capabilities. They identify and scope, for approval, the projects that will set up the infrastructure for future activities and produce quality outputs during the next financial year. Important issues are recognition of how each unit adds value to the organisation and the statistical process, identification of external and internal customers and preparation of marketing plans, and attention to critical success factors, those things which must be done or achieved if the organisation is to succeed with its mission and prosper.

Under the evolving budget process of the New Zealand Government, this year there are several key documents which describe the Department's role and delivery of services.

The Department is preparing a draft purchase agreement which describes outputs that are provided to the Government and community and funded out of taxation revenues. Another document addresses the ownership issues arising from the fact that the Government actually owns the Department as a means of obtaining its desired outputs, rather than purchasing them from private sector suppliers. A third document is a third party business plan, which describes the activities connected with sales of statistical services to non-Government customers.

A significant move associated with the reorganisation is a major upgrade in the computer systems and technical capabilities of the Department. The corporate strategy being implemented will provide a WAN/LAN environment that has a corporate approach to data management, and then allows each of the three groups to purchase compatible equipment and manage their own computer based activity. The three groups are each affected by this upgrade:

- Survey Management are investing in systems for the improved collection and editing of survey data, and will be providing productivity gains from the gathering together of survey collection and processing steps that will enable the intended quality improvements in analysis and presentation of statistical outputs to users.
- National and Regional Statistics have units assigned to particular topics such as labour market statistics, which bring together information from a number of social and business surveys. This allows the Department to develop closer understanding of needs of major policy agencies and users, and turn this into frameworks for analysing statistics, survey specifications for the Survey Management group, and also provide relevant analyses from existing databases. The capacity to do this well will be greatly enhanced by the range of productivity and analysis tools being made available.
- The Information Services group are consolidating their capacity to apply data access systems to major survey databases to produce a wide variety of data

access products and services. They are accountable for providing almost instantaneous responses to nearly all requests for information, either by off-the-shelf products or by setting up and running a customised analysis.

POLAND (from Dr. Jozef Bielecki)

An International Conference on Small Area Statistics and Survey Designs was held in the Central Statistical Office of Poland in Warsaw on September 30-October 3, 1992. Sponsors of the conference were the Central Statistical Office of Poland, the Polish Statistical Society and the IASS.

The objective of the conference was to review both the theoretical and practical aspects of survey design and estimation for small area statistics. This statistical problem is very important for countries with economies in transition where complete reporting and censuses were the predominant sources of statistical data.

In the conference, 38 experts from 17 foreign countries and 25 from Poland took part. The opening addresses to the conference were given by Prof. Jan Kordos, the Vice President of the Central Statistical Office in Poland, by Prof. Graham Kalton, the President of the IASS, and by Prof. Ryszard Zasepa, the senior statistician from the Polish Statistical Society.

The invited papers presented by the eminent authors concerned various small area statistics problems such as:

- Richard A. Griffin and Alfredo Navarro (USA): Survey Design and Estimation for Small Area Statistics from the Decennial Census Content Sample.
- P.D. Falorsi, S. Falorsi and A. Russo (Italy): Empirical Comparison of Small Area Estimation Methods for Italian Labour Force Survey.
- M.P. Singh, J. Gambino and H. Mantel (Canada): Issues and Options in the Provision of Small Area Estimates.
- S. Szwalek, H. Zaremba (Poland): Sources of Statistical Data and Some Small Area Estimates
- Wesley L. Schaible (USA): Use of Small Area Estimators in the U.S. Federal Programs.
- L. Mihalyffy (Hungary): Small Area Statistics, Hungarian Experiences
- B.D. Tikkiwal (India): Modelling Through Survey Data for Small Domains
- Loeiz Laurent and Patrick Blanck (France): Nature of Space and Choice of Variables
- Carl-Erik Sarndal (Canada): Design-based Approaches in Estimation for Domains.
- A. Marker and J. Waksberg (USA): Small Area Estimation for the National Health Interview Survey.
- T. Holt and F. Moura (U.K.): Mixed Models for Making Small Area Estimates
- J. Kordos (Poland): Approaches to Small Area Statistics in Poland.
- A. Russo and P.D. Falorsi (Italy): Conditional and Unconditional Properties of Small Area Estimator in Two Stage Sampling.
- G.H. Choudhry and J.N.K. Rao (Canada): The Evaluation of Small Area Estimators - An Empirical Study.

Furthermore, 17 contributed papers mainly on small area estimation were presented. Among authors of these papers were: Mary H. Mulry and Bruce D. Spencer (USA),

K. Krótki (Canada), Dave Elliot (U.K.), Daniela Cocchi, Mario di Traglia, Corrado Lagazio and Monica Pratesi (Italy), Jos de Ree and Mila van Huis (Netherlands), I. Vanags and E. Vanags (Latvia), Vaclav Cernak and Josef Studlar (Czechoslovakia), E. Krassinets and E. Tiourioukanowa (Russia), and E. Eskandar Seroush (Iran).

A closing panel discussion was chaired by Dr. Richard Platek. Both invited and contributed papers, as well as panel discussion abstracts, are being published.

In the Central Statistical Office of Poland the conference papers are helpful for the preparation of practical training in small area statistics. Furthermore, a program of small area statistics estimation improvement will be developed.

SPAIN (from A. Iztueta Azkue)

The Methodology Area of EUSTAT (Basque Statistics Institute) and the Faculty of Computer Science of the University of the Basque Country, have started a project to develop software for the automatic imputation of quantitative variables. The first area of application will be the annual economic survey of the retail trade sector.

The software will have a modular structure, will interface with other statistical software such as SPADN, SAS and BLAISE, will run on a PC, will use the C programming language, and will include a tutorial. The software will handle both univariate and multivariate imputation.

Four methodological strategies are considered: using linear models; using trees with a hierarchical structure; using causal networks; and using neural networks.

The Methodology Area of EUSTAT has just finished the development of software for stratification and selection of groups which contains the modules for stratification of groups, selection of groups, and the processing of sampling files. The application runs on VAX-Digital and a diskette-demonstration, a users handbook and technical documentation are available.

EUSTAT (Methodology Area) is finishing a pilot study on information collection by phone for updating the economic directory. The size of the sample is 6.000 establishments and the comparison with the personal interview system is focused in the following aspects: unit cost; evaluation and types of non-response; consistency of response for the economic variables; coverage of both systems; and differences in behaviour.

Standards of quality control in the data production process and results. Conscious of the importance of controlling and measuring the quality of the data production process, EUSTAT has started a project that aims to set some quality standards for the different phases of the process of production, as well as quantifying, through statistical indicators, the quality of the different measurements and results in a standardized way for the whole Institute.

Within the International Statistics Seminar 1992, EUSTAT organized three courses:

1. "Methodological issues in family expenditures surveys" by Malka Kantorowitz, Jerusalem.
2. "Quality control in statistics from administrative registers and records", by Hans Petterson, Stockholm.
3. "Analyse des données et classification automatique numérique et symbolique", by Edwin Diday, Paris.

The minutes are available and, if interested, orders can be addressed to EUSTAT Seminario Internacional.

To get more information on this report, please contact: EUSTAT, Methodology Area, Dato, 14-16, 01005 Vitoria-Gasteiz, Spain.
Fax (34 45 13 26 92).

SWEDEN (from Anders Christianson)

Major Changes to the Swedish Statistical System

From January 1993, the Swedish statistical system is subject to new laws concerning funding and coordination of National statistics. Further a new General Director for Statistics Sweden has been appointed: Jan Carling, former General Director for The Swedish Agency for Administrative Development.

The major change will be a decentralisation of the responsibilities for official statistics. Swedish official statistics has, since the 1960's been centralized to Statistics Sweden, which also has received the funding for the production of the statistics.

However, in cases where government agencies can be identified as main users of surveys, these users will receive the funding for them. It is estimated that half of Statistics Sweden's current budget will be redirected to main users within a few years. The user may buy the statistics production from Statistics Sweden or from another organization if available, or set up its own statistical department to produce statistics.

It is assumed that, at least initially, the bulk of the surveys will be conducted by Statistics Sweden, although funded via main users. In the long run, however, there is no doubt that Statistics Sweden will face more and harder competition. Thus, measures are being taken to compete better, by means of more cost effective survey design and better proposal writing.

To administer this change, a committee with the new General Director as Chair has been appointed.

TURKEY (from H. Oztas Ayhan)

The following censuses and surveys were carried out in Turkey and some of the results were also released recently.

1. Results of Village General Information of the **1991 Census of Agriculture** was recently published by the State Institute of Statistics (SIS). Findings from the Sample Survey of Agricultural Holdings will be released in the near future by the SIS.
2. Results of the **1990 Response Reliability Survey of the Population Census** were published as a report by the SIS.
3. The Ministry of Health supported a **1992 Health Services Utilization Survey** in Turkey. Results are expected to be released in the very near future.
4. A **Solid Waste Survey** for determining the structural distribution of solid waste for 1992 was carried out by the State Institute of Statistics. The survey was designed to obtain information on municipalities, establishments and households.
5. One of the aims of the **1992 Industrial Waste Survey** was to make an inventory of all establishments which were engaged in the industrial sector. These were basically the large establishments and were covered by complete enumeration. Basic information on industrial waste was determined. The findings will be released by the SIS.
6. The **1992 Survey on Small and Medium Scale Establishments** covers establishments employing 10-49 and 50-99 workers by using a stratified sample design. The study aimed at determining structural changes and trends in structural change of establishments. The results will be released by SIS.

UNITED KINGDOM (from Roger Thomas)

1991 Census Small Area Statistics: The statistics for small areas derived from the 1991 Census of Population are now available via the Office of Population Censuses and Surveys and to academic users via the Manchester University Computing Centre. The output consists of tables using standard census variables at household and individual level and are available at the level of census enumeration districts and standard and non-standard aggregations of these. (OPCS Customer Services tel: 44 329-842511 ext 3800; Keith Cole, University of Manchester 44 61-275-6054).

The **British Household Panel Survey (BHPS)** involves an annual survey of some 10,000 individuals drawn from a nationally representative sample of over 5,500 households. Over the projected life of the project research will cover: labour market behaviour; income and wealth; residential mobility; household dynamics; health and use of health services; socio-economic values; consumption; and aspects of panel methodology. Data from the first wave of the BHPS were deposited in the Economic and Social Research Council Data Archive in January 1993. (Professor D. Lievesley in ESRC Data Archive 44 206 872009 or Professor Jonathan Gershuny in BHPS 44 206 872957.)

Computer Assisted Personal Interviewing (CAPI) methods are being applied to two major British government surveys concerned with household finances. These are: the

Family Resources Survey, which is now running at full volume and will cover 26,000 households annually. The Labour Force Survey has been using CAPI/CATI for a number of years and the next development is likely to be the introduction of computer assisted coding of occupation and industry in the field. (J. King, Central Statistical Office, tel: 44 71-217-4221; Dr M McDowall, Department of Social Security, tel: 44 71-962-8000 x 28242; I. Knight, OPCS, 44 71-242-0262 x 2291; P Costigan, SCPR, tel: 071-250-1866).

The National Survey of Sexual Attitudes and Lifestyles aims to investigate sexual attitudes and behaviour associated with the propagation of the HIV virus. It was funded by the Wellcome Trust and carried out by Social and Community Planning Research (SCPR). It parallels a similar survey carried out in France. Some results were published at the end of 1992 and further analysis of the data is in progress. (Julia Field, SCPR, tel: 44 71-250-1866).

Methodological investigation of political opinion polls: Opinion polls conducted by a range of polling organisations in the period preceding the 1992 British General Election erred unanimously in the direction of overestimating support for the Labour Party (which was predicted to win the election) and underestimating support for the Conservatives (who in fact won by a substantial margin). A number of methodological reviews and methodological experiments have since been carried out to try to explain the reasons for this failure. Several publications are forthcoming. (Professor T.M.F. Smith tel: 44 703-593-655; Professor R. Jowell, tel: 44 71-250-1866; Professor M. Collins, tel: 44 71-477-8620).

The British Social Attitudes Survey has been conducted annually by Social and Community Planning Research since 1983, except in General Election years, when it is replaced by a survey in the British Election Study series. It contains questions designed to measure changes over time in respect of a wide range of social, political and moral attitudes. Topic areas covered include: public spending, economic expectations, political participation, civil liberties, business ethics, racial prejudice and discrimination. The BSA is the British participant in the International Social Survey Programme, through which mutually agreed rotating modules of questions are asked annually of samples of adults in 21 countries in Europe and elsewhere. (Professor R. Jowell, tel: 44 71-250-1866)

UNITED STATES (from Daniel Kasprzyk)

The U.S. Current Population Survey (CPS), the labor force survey of the U.S. noninstitutionalized population, nears the end of an extensive modernization program begun in the mid 1980's. In January 1994, the 1,500 CPS interviewers using laptop computers will be asking a revised set of labor force questions. Twenty-five years have passed since the CPS has undergone a revision of this magnitude. Revisions include: 1) drawing a new sample based on the 1990 U.S. decennial census; 2) updating concepts and questions to provide policymakers relevant data to monitor and evaluate the U.S. labor force; 3) conducting interviews on the computer, either Computer Assisted Telephone Interviews (CATI) or Computer Assisted Personal Interviews (CAPI); 4) processing data with a state-of-the-art system that is flexible, portable, modular, and cost-effective, and providing users of CPS data timely access

to current and historical information and documentation through an interactive data access system. For information contact Chet Bowie, Demographic Surveys Division, Room 3334, Building 3, U.S. Bureau of the Census, Washington, D.C. 20233, telephone: 301-763-7918.

The U.S. Bureau of the Census, in conjunction with the Research Triangle Institute (RTI), is designing a survey to examine the extent to which uncertain or transient residency situations may lead to undercoverage in the decennial census or household surveys. The Living Situation Survey has several features intended to gain new information about causes of coverage error. It includes a far more inclusive set of roster probes than are used in other surveys to list persons with tenuous or ambiguous attachments to households, as well as regular residents. It also collects detailed information about residency patterns of individuals over the previous 3 months, as well as changes in household composition, mobility, and attachments of persons in households and other places. Data collection for the survey is scheduled to be conducted by RTI from May to August 1993. The research may yield coverage improvements of undercounted populations in the Decennial Census as well as in the Survey of Income and Program Participation and other household surveys conducted by Census Bureau. For more information, contact Elizabeth Martin or Laurel Schwede, Center for Survey Methods Research, Census Bureau, Washington, D.C. 20233.

In September 1992 representatives from various countries, including the United States, met in Paris to describe and discuss longitudinal data sets that focus on education. This meeting, the first of a regular series of meetings aimed to establish an international network of educational researchers interested in longitudinal education data sets focussing on cross-national comparisons. The network is being organized by Alain Michel, Ministère de l'éducation nationale et de la culture, Direction de l'évaluation nationale et de la prospective, 142, rue du Bac 75007, Paris, France. The U.S. representatives are Paul Planchon and Jeanne Griffith, both Associate Commissioners of the U.S. National Center for Education Statistics, 555 New Jersey Avenue, N.W., Washington, D.C. 20208.

QUESTIONS AND ANSWERS

This section of the newsletter is organised by Professor Leslie Kish. A panel of survey experts is currently being formed to support Leslie Kish in preparing answers. If you are interested in joining the panel please contact the editor, Denise Lievesley.

Questions can be sent directly to Leslie Kish at ISR - The University of Michigan, Ann Arbor, MI 48106, USA; Internet leslie.kish@umich.edu, Fax 313-774-8263 or via Denise Lievesley, ESRC Data Archive, University of Essex, Wivenhoe Park, Colchester, Essex CO4 3SQ, UK; e-mail denise@uk.ac.essex, Fax 44 206 872003. Please indicate whether or not you want your name given with the question. We hope that this will become an open forum and we welcome additions, modifications and discussions of previously published answers. Contributors to answers will be acknowledged if they wish.

29.1 Question

Are ratio estimators in any related to the topic of post-stratification? If yes, how?

Answer

You are right to note the relation as some others have. Alert readers of textbooks notice the similarity, then wonder why the two topics are so widely separated, with post-stratification early in sampling books and ratio estimation much later without cross references.

Post-stratification may be viewed as a special case of ratio means. These may be written as $\bar{y}_r = \Sigma(X_h/\Sigma X_h)(y_h/x_h)$; here X_h is an auxiliary (ancillary) variable for adjusting the random variables y_h and x_h within control classes h . This is called a "separate ratio estimator" to distinguish it from the combined ratio estimator $\bar{r} = \Sigma y_h/\Sigma x_h$.

This is equivalent to a post-stratified mean $\bar{y} = \Sigma n_h y_h/n_h$ obtained by a simple random sample of $n = \Sigma n_h$. This alternative to proportionate stratified element sampling is often introduced in an early chapter on stratified element sampling. It serves as a simple heuristic device to show how estimation can serve as a substitute for selection procedures. This is a valuable lesson, because stratifying variables may become available only after the selection of sample cases, and after completion of the survey. Thus post-stratification is also called "stratification after selection" sometimes.

In actual practice, simple random samples are not often (ever) selected, but ratio estimation is often applied to data from complex multistage samples. The weights from "known" population counts are applied to ratios of sample statistics. Usually more important than adjustments for sampling variation are corrections for nonresponses and especially for noncoverage, though the technical presentation may obscure this blemish.

Sometimes the adjustments are applied repeatedly with iterated methods, as in "synthetic with estimation" for small domain estimates. Ratio estimates may

also be viewed as special applications of weighted means, $\sum W_h \bar{y}_h$ in general. This leads to topics such as adjustments and standardization.

29.2 Question

"Random routes" appear as a reasonable procedure for probability selection of sample dwellings from sample blocks, because they are a cheaper alternative than complete listings of dwellings. How valid and how efficient is this procedure for multistage area sampling?

Answer

This question arises sometimes when area sampling is used to identify sample blocks (or other areas) with clear boundaries. Assume further that these blocks are selected with probabilities proportional to measures of size (MOS) in numbers of dwellings that are reasonably up to date and accurate, but not perfect. If mappings or lists of the dwellings were available, they would be used for selection, and it is felt to be too expensive to prepare those lists. The procedures typically designate a starting spot, usually a corner, and instruct the interviewer to proceed in a designated direction (e.g. clockwise) and select into the sample the next fixed number n_b of dwellings. In a modification the interviewer proceeds to obtain a fixed number n_b of interviews, but such biased first call procedures we need not discuss here.

Most of us would not care to use this procedure, because it poses practical obstacles to the interviewer that prevent its conversion into a feasible probability selection. The chief problems:

- a) The designated starting point usually has to be a corner dwelling, which must be found.
- b) The dwellings often do not lie in a simple, straight line, and this needs complex instructions, yet results in looseness in the selection.
- c) The actual number of dwellings ($N_a \neq \text{MOS}_a$) is not known and this results in unequal, and often unknown probabilities for the dwellings.

On the other hand prelisting all the N_a dwellings may be a costly procedure, which the "random route" tries to avoid. The cost of listings is reduced

- a) When the ratio of sample dwellings n_a/N_a is large, and even more by repeated uses of the listings by several surveys; and such repeated use is common.
- b) When the variation in cluster sizes N_a is reduced by combining small blocks, and by splitting the very large blocks (a small percentage of all blocks), especially for repeated uses of the same sample of blocks (clusters).

Thus random routes, if used at all, should be confined to single use surveys, within single cities where interviewers may be closely supervised and controlled, and where good measures of size are available.

I advise against them, but there are organizations that use random routes, the most prominent of these is the INE of Spain. Perhaps a reply from one of them would be welcome and informative.

